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On a collection of aquatic beetles (Insecta: Coleoptera) from Southern Eastern Ghats, Tamil Nadu, India

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Abstract

The present study deals with a small collection of aquatic beetles under the families Gyrinidae, Dytiscidae and Hydrophilidae from different water bodies from the Eastern Ghats of Tamil Nadu collected during January 2019. A total of 29 examples were studied which resulted in the identification of nine species under seven genera belonging to five subfamilies of aquatic Coleoptera.

Keywords: Diversity, Distribution, Taxonomy and Species List

Introduction

Southern Eastern Ghats of Tamil Nadu covers a total area of around 75,000 sq. km. Sirumalai and Karanthamalai Hills are located in the Southernmost part of the Eastern Ghats. To the north of Kaveri River are the higher Kollimalai, Pachaimalai, Shevaroy, Kalrayan Hills, Palamalai and Mettur Hills.

Insects contribute over half of all the recorded species and over three-fourth of the estimated species in the globe (Hammond, 1992). Aquatic insects constitute over 95% of the total individual or species of macroinvertebrates in suitable freshwater biotopes (Sivaramakrishnan and Job, 1981). The order Coleoptera is enormously rich in species and widespread in many terrestrial and freshwater environments throughout the world. The study of aquatic beetles of India has been greatly neglected (Vazirani, 1968). The study of aquatic Coleoptera of Southern-Eastern Ghats is almost nil. Thus, the present study has been taken up to inventories the aquatic coleopteran fauna from the streams of Southern Eastern Ghats of Tamil Nadu, India.

Materials and Methods

The samples have been collected from the Kuttaikkad, patta land, 10°16'12.3"N, 77°59'32.1"E, alt. 676.7m streams of Sirumalai Hills lie 16km away from Dindigul district and Kammimara Temple, 10°16'53.8"N, 78°11'60.5"E, alt. 397m, Karanthamalai Hills. Surface floating and free-swimming coleopterans were collected by S. Dash and Party with small circular nets made of either coarsely meshed cotton cloths or finely meshed aluminium wire. After collection, they were initially preserved in 90% alcohol and later permanently preserved in 70% alcohol. Aquatic coleopterans were studied under a Leica EZ4 stereo zoom binocular microscope. The study of genitalia was also done using the same microscope. Identification was based on Bistrom (1997), Biswas & Mukhopadhyay (1995), Vazirani (1969, 1984) and Wewalka (1979, 2016).

Systematic Account

A. Family GYRINIDAE
Subfamily GYRININIE
I. Genus ***Dineutus*** Macleay, 1825

1825. *Dineutus* Macleay, *Ann. Jav,* **1**: 30.

1. *Dineutus indicus* Aube, 1938

1938. *Dineutus indicus* Aube, *Species Coleopters,* **6**: 772.

Material examined: Dist. Dindigul, Sirumalai Forest, Kannimar Kovil, Kuttaikkad, patta land, 10°16'12.3"N, 77°59'32.1"E, alt. 676.7m, 12.i.2019, coll. S. Dash and Party, 03 ♂♂, 07 ♀♀ (Reg. No. 25986/H4A); Karanthamalai Hills (Eastern Ghats), near Kammimara Temple, 10°16'53.8"N, 78°11'60.5"E, alt. 397m, 14.i.2019, coll. S. Dash and Party, 01 ♂, 05 ♀♀ (Reg. No. 25987/H4A); Dist. Salem, Vaniyar Reserve Forest,

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11°48'23.3"N, 78°16'25.5"E, alt. 628m, 21.i.2019, coll. S. Dash and Party, 01 ♂, 01 ♀ (Reg. No. 25988/H4A).

Distribution: India: Andhra Pradesh, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Puducherry, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, and West Bengal (Vazirani, 1984). *Elsewhere*: Pakistan.

II. Genus ***Aulonogyrus***, Motschulsky, 1853

2. *Aulonogyrus obliquus* (Walker, 1858)

1858. *Gyrinus obliquus* Walker, *Ann. Mag. Nat. Hist,* **2**(3): 205.

1883. *Aulonogyrus obliquus*: Regimbart, *Ann. Soc. ent. Fr,* **3**(6): 137.

Material examined: Dist. Dindigul, Sirumalai Forest, Kannimar Kovil, Kuttaikkad, patta land, 10°16'12.3"N, 77°59'32.1"E, alt. 676.7m, 12.i.2019, coll. S. Dash and Party, 02 ♂♂, 01 ♀ (Reg. No. 25989/H4A).

Distribution: India: Andhra Pradesh (Eastern Ghats), Madhya Pradesh and Tamil Nadu (Vazirani, 1984). *Elsewhere*: Sri Lanka.

III. Genus ***Orectochilus*** Eschscholtz, 1833

3. *Orectochilus discifer* (Walker, 1859)

1859. *Gyrinus discifer* Walker, *Ann. Mag. Nat. Hist,* **3**(3): 51.

1883. *Orectochilus discifer* : Regimbart, *Ann. Soc. ent. Fr,* **3**(6): 416.

Material examined: Dist. Dindigul, Sirumalai Forest, Kannimar Kovil, Kuttaikkad, patta land, 10°16'12.3"N, 77°59'32.1"E, alt. 676.7m, 12.i.2019, coll. S. Dash and Party, 01 ♂ (Reg. No. 25990/H4A).

Distribution: India: Andhra Pradesh (Eastern Ghats), Jharkhand, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu, and West Bengal (Vazirani, 1984). *Elsewhere*: Sri Lanka.

B. Family DYTISCIDAE

Subfamily DYTISCINAE

IV. Genus ***Sandracottus*** Sharp, 1882

1882. *Sandracottus* Sharp, *Sci. Trans. Royal Dublin Soc,* (2): 672.

4. *Sandracottus festivus* (Illiger, 1801)

1801. *Dyticus festivus* Illiger, *Magazin fur Insektenkunde, Braunschweig*, **1**(1-2): 166.

1882. *Sandracottus festivus*: Sharp, *Sci. Trans. R. Dublin Soc,* **2**: 686.

2012. *Sandracottus festivus*: Ghosh & Nilsson, *Skorvnopparn Umel supplement*, **3**: 18.

Material examined: Dist. Salem, Vaniyar Reserve Forest, 11°49'06.3"N, 78°16'19.4"E, alt. 791m, 21.i.2019, coll. S. Dash and Party, 01 ♀ (Reg. No. 25991/H4A).

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Punjab and Tamil Nadu (Ghosh & Nilsson, 2012). *Elsewhere*: China, Pakistan and Sri Lanka.

V. Genus ***Hydaticus*** Leach, 1817

1817. *Hydaticus* Leach, *Zool. Miscell,* **3**: 69, 72.

2012. *Hydaticus*: Ghosh & Nilsson, *Skorvnopparn Umel supplement* **3**: 24.

5. *Hydaticus bipunctatus* Wehncke, 1876

1876. *Hydaticus bipunctatus* Wehncke, *Ent. Zeitung*, **37**: 196.

Material examined: Dist. Salem, Vaniyar Reserve Forest, 11°49'06.3"N, 78°16'19.4"E, alt. 791m, 21.i.2019, coll. S. Dash and Party, 01 ♂ (Reg. No. 25992/H4A).

Distribution: India: Andhra Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Puducherry, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal. *Elsewhere*: Bangladesh, Bhutan, Myanmar, Nepal, Pakistan, Sri Lanka, China, Indonesia, Japan, Korea, Philippines, Taiwan, Thailand, Vietnam and Australian region.

6. *Hydaticus discindens* Walker, 1858

1858. *Hydaticus discindens* Walker, *Ann. Mag. Nat. Hist*, **2**(3): 204.

2016. *Hydaticus discindens* : Wewalka, *Koleopt. Rdsch*, **86**: 22.

Material examined: Dist. Salem, Vaniyar Reserve Forest, 11°48'23.3"N, 78°16'25.5"E, alt. 628m, 21.i.2019, coll. S. Dash and Party, 01 ♂ (Reg. No. 25993/H4A).

Distribution: India: Andhra Pradesh, Karnataka, Odisha, Tamil Nadu and West Bengal (Wewalka, 2016). *Elsewhere*: Bhutan and Sri Lanka.

7. *Hydaticus ricinus* Wewalka, 1979

1979. *Hydaticus ricinus* Wewalka, *Koleopterologische Rundschau*, **54**: 128.

2012. *Hydaticus ricinus*: Ghosh & Nilsson, *Skorvnopparn Umel supplement*, **3**: 27.

2013. *Hydaticus ricinus*: Ghosh & Hegde, *Rec. zool. Surv. India*, **113**(2): 63.

Material examined: Dist. Salem, Vaniyar Reserve Forest, 11°49'06.3"N, 78°16'19.4"E, alt. 791m, 21.i.2019, coll. S. Dash and Party, 01 ♀ (Reg. No. 25994/H4A).

Distribution: India: Himachal Pradesh, Assam, Chhattisgarh (Ghosh *et al*., 2014), Madhya Pradesh (Jaiswal *et al*., 2014), Maharashtra (Ghosh, 2015) and Tamil Nadu. *Elsewhere*: Afghanistan, Bhutan, Myanmar, Nepal, Pakistan, Sri Lanka, China, Laos, Thailand and Vietnam.

VI. Genus ***Hydrovatus*** Motschulsky, 1853

1853. *Hydrovatus* Motschulsky, *Imp. Soc. Lit. Finn,* p. 4.

2012. *Hydrovatus* : Ghosh & Nilsson, *Skorvnopparn Umel supplement* **3**: 37.

8. *Hydrovatus castaneus* Motschulsky, 1855

1855. *Hydrovatus castaneus* Motschulsky, *Nouv. Etudes Entom*. **4**: 82

Material examined: Dist. Salem, Ondi Kadai, Yercaud, 11°47'02.7"N, 78°12'41.2"E, alt. 1363m, 20.i.2019, coll. S. Dash and Party, 01 ♂ (Reg. No. 25995/H4A).

Distribution: India: Assam, Bihar, Jharkhand, Kerala, Maharashtra, Odisha, Punjab, Tripura, Tamil Nadu and West Bengal (Ghosh & Nilsson, 2012). *Elsewhere*: Bangladesh, Indonesia, Myanmar, Sri Lanka and Vietnam.

C. Family HYDROPHILIDAE
Subfamily HYDROPHILINAE
VII. Genus ***Helochares***, Mulsant, 1844
1844. *Helochares* Mulsant, *Hist. Nat. Col. Fr. Palp,* p. 197.

9. *Helochares pallens* (Macleay, 1825)

1825. *Enhydrus pallens* Macleay, *Annual. Javan.* p. 35.

1926. *Helochares pallens* : d' Orchymont, *Ann. Bull. Soc. Ent. Belgiq,* **66**: 232.

Material examined: Dist. Dindigul, Sirumalai Hill, between Kadamankulum and Periathanni Lake, 10°14'19.7"N, 78°01'33.9"E, alt. 1114m, 13.i.2019, coll. S. Dash and Party, 02 ex. (Reg. No. 25996/H4A).

Distribution: India: Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Odisha, Tamil Nadu and West Bengal. *Elsewhere*: Egypt, Indonesia, Madagascar, Philippines and Syria.

Conclusion

A total of 29 examples were studied resulting in the identification of nine species under seven genera belonging to five subfamilies of aquatic Coleoptera. All the species are reported from the study area for the first time.

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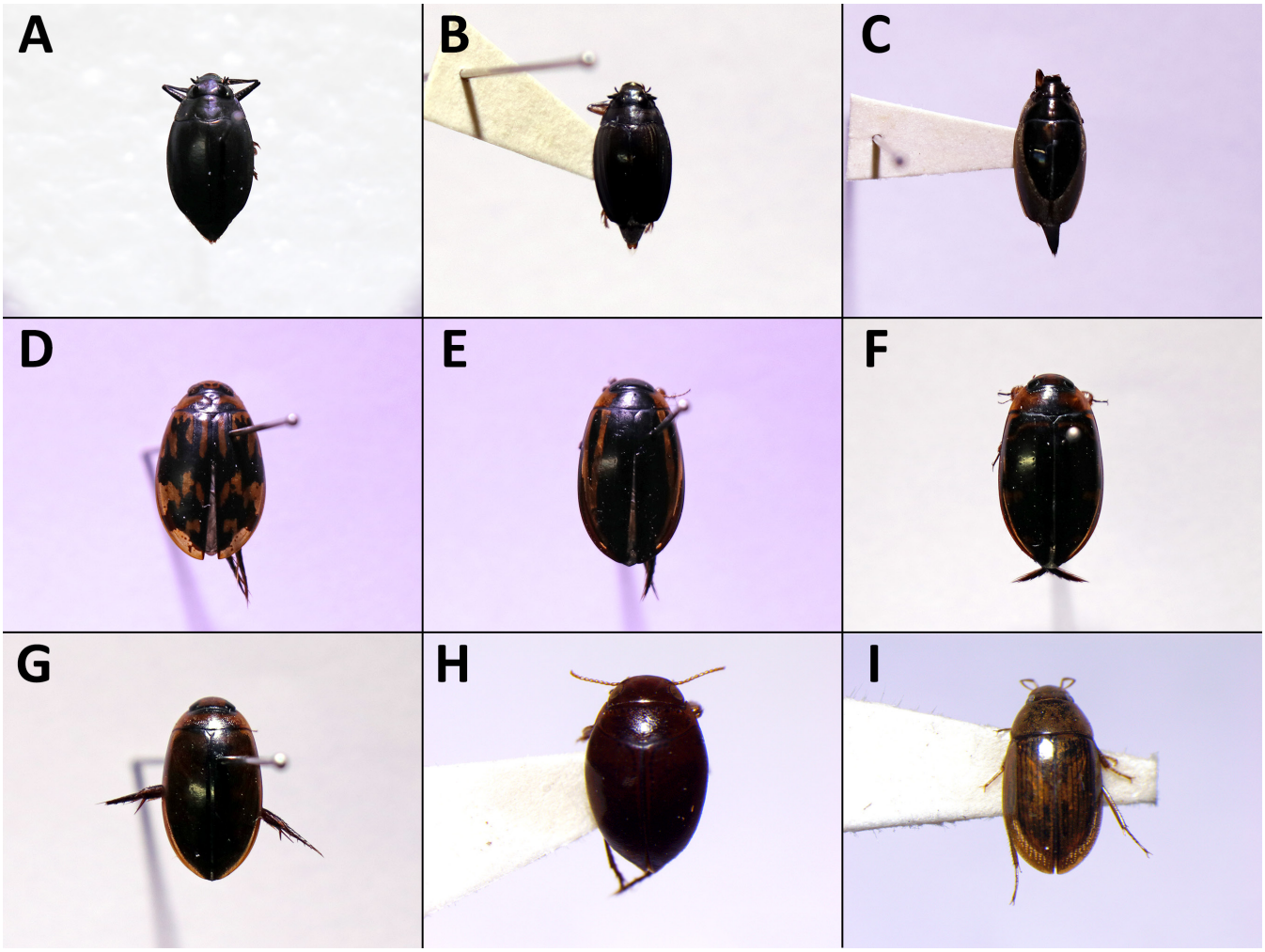
Plate 1



A. *Dineutus indicus* Aube, 1938 **B.** *Aulonogyrus obliquus* (Walker, 1858)**, C.** *Orectochilus discifer* (Walker, 1859)
D. *Sandracottus festivus* (Illiger, 1801) **E.** *Hydaticus bipunctatus* Wehncke, 1876 **F.** *Hydaticus discindens* Walker, 1858
G. *Hydaticus ricinus* Wewalka, 1979 **H.** *Hydrovatus castaneus* Motschulsky, 1855 **I.** *Helochares pallens* (Macleay, 1825).